CLAIMS

What is claimed is:

1. A method for detecting an anomaly on a top surface of a substrate, or within the substrate, comprising:

directing a first radiation beam having a first wavelength at the top surface of the substrate at a first angle measured from the normal direction to the top surface;

directing a second radiation beam having a second wavelength at the top surface of the substrate at a second angle measured from the normal direction to the top surface, wherein the second wavelength is not equal to the first wavelength;

detecting radiation from the first radiation beam; and

detecting radiation from the second radiation beam.

2. The method of claim 1, further comprising causing relative motion between the first and second radiation beams and the top surface of the substrate.

3. The method of claim 1, further comprising documenting the presence of an anomaly if the detected radiation shows that the first radiation beam was scattered upon interacting with the top surface.

4. The method of claim 1, further comprising documenting the presence of an anomaly if the detected radiation shows that the second radiation beam was scattered upon interacting with the top surface.

5. The method of claim 1, further comprising comparing radiation detected from the first radiation beam to radiation detected from the second radiation beam to determine whether the anomaly comprises a COP or a particle.

6. The method of claim 1, wherein the first wavelength is around 266 nanometers.

7. The method of claim 1, wherein the first wavelength is around 355 nanometers.

8. The method of claim 1, wherein the first wavelength is a wavelength in the ultraviolet spectrum of radiation.

9. The method of claim 1, wherein the second wavelength is around 532 nanometers.

10. The method of claim 1, wherein the second wavelength is a wavelength in the visible spectrum of radiation.

11. The method of claim 1, wherein the first wavelength is around 266 nanometers and the second wavelength is around 532 nanometers.

12. The method of claim 1, wherein the first wavelength is around 355 nanometers and the second wavelength is around 532 nanometers.

13. The method of claim 1, wherein the first wavelength is in the ultra-violet spectrum of radiation and the second wavelength is in the visible spectrum of radiation.

14. The method of claim 1, wherein the first angle is around 70 degrees.

15. The method of claim 1, wherein the second angle is around zero degrees.

16. The method of claim 1, wherein the directing of a first radiation beam and the directing of a second radiation beam are performed simultaneously.

17. The method of claim 1, wherein the detecting of radiation from the first radiation beam and the detecting of radiation from the second radiation beam are performed simultaneously.

18. The method of claim 1, wherein the first radiation beam comprises a laser beam.

19. The method of claim 1, wherein the second radiation beam comprises a laser beam.

20. The method of claim 1, wherein the detecting of radiation from the second radiation beam comprises detecting scattered radiation from the second radiation beam and avoiding reflected radiation from the second radiation beam.

21. The method of claim 2, further comprising documenting the presence of an anomaly if the detected radiation shows an increase in the amount of scattered radiation produced by the first radiation beam.

22. The method of claim 2, further comprising documenting the presence of an anomaly if the detected radiation shows an increase in the amount of scattered radiation produced by the second radiation beam.

23. A method for detecting an anomaly on a top surface of a substrate, or within the substrate, comprising:

directing a first radiation beam having a first wavelength at the top surface of the substrate at a first angle measured from normal, wherein the first wavelength is in the ultraviolet spectrum of radiation;

directing a second radiation beam having a second wavelength at the top surface of the substrate at a second angle measured from normal, wherein the second wavelength is in the visible spectrum of radiation;

detecting radiation from the first and second radiation beams;

causing relative motion between the first and second radiation beams and the top surface of the substrate; and

documenting the presence of an anomaly if the detected radiation shows an increase in the amount of scattered radiation produced by the first radiation beam or the second radiation beam.

24. A system for detecting an anomaly on a top surface of a substrate, or within the substrate, comprising:

a radiation source operable to emit a first wavelength radiation and a second wavelength radiation;

at least one objective operable to focus the first wavelength radiation into a first radiation beam and to focus the second wavelength radiation into a second radiation beam; and

a detector mounted to detect radiation.

25. The system of claim 24, further comprising a beamsplitter to separate the first radiation beam from the second radiation beam.

26. The system of claim 24, further comprising a collector operable to collect radiation and focus the radiation onto the detector.

27. The system of claim 24, wherein the radiation source is provided by a laser source.

28. The system of claim 24, wherein the first wavelength is around 266 nanometers.

29. The system of claim 24, wherein the first wavelength is around 355 nanometers.

30. The system of claim 24, wherein the first wavelength is a wavelength in the ultraviolet spectrum of radiation.

31. The system of claim 24, wherein the second wavelength is around 532 nanometers.

32. The system of claim 24, wherein the second wavelength is a wavelength in the visible spectrum of radiation.

33. The system of claim 24, wherein the first wavelength is around 266 nanometers and the second wavelength is around 532 nanometers.

34. The system of claim 24, wherein the first wavelength is around 355 nanometers and the second wavelength is around 532 nanometers.

35. The system of claim 24, wherein the first wavelength is a wavelength in the ultraviolet spectrum of radiation and the second wavelength is a wavelength in the visible spectrum of radiation.

36. The system of claim 25, further comprising at least one mirror mounted to direct the first radiation beam at the top surface at a first angle measured from normal and to direct the second radiation beam at the top surface at a second angle measured from normal.

37. The system of claim 25, wherein the first angle is around 70 degrees.

38. The system of claim 25, wherein the second angle is around zero degrees.

39. The system of claim 27, wherein the laser source is a solid-state laser.

40. The system of claim 27, wherein the laser source can vary the wavelength of emitted radiation using one or more crystals.

41. The method of claim 1, further comprising comparing radiation detected from the first radiation beam to radiation detected from the second radiation beam to determine whether the anomaly is located on the top surface or below the top surface of the substrate.

42. A method for detecting an anomaly only on a top surface of a substrate, comprising:

directing a first ultraviolet radiation beam at the top surface of the substrate at a first angle measured from the normal direction to the top surface;

directing a second ultraviolet radiation beam at the top surface of the substrate at a second angle measured from the normal direction to the top surface;

detecting ultraviolet radiation from the first ultraviolet radiation beam; and

detecting ultraviolet radiation from the second ultraviolet radiation beam.

43. The method of claim 42, wherein the first and second ultraviolet radiation beams have a wavelength of around 266 nm.

44. The method of claim 42, wherein the first and second ultraviolet radiation beams have a wavelength of around 355 nm.

45. The method of claim 42, wherein the substrate comprises a silicon-on-insulator wafer.